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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/603,704

06/25/2003

Michael Philip Hagle

123260 (21635-0088)

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31450

7590

04/18/2006

MCNEES WALLACE & NURICK LLC

100 PINE STREET

P.O. BOX 1166

HARRISBURG, PA 17108-1166

EXAMINER

COMPTON, ERIC B

ART UNIT

PAPER NUMBER

3726

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/603,704	Applicant(s) HAGLE ET AL.	
	Examiner Eric B. Compton	Art Unit 3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2006.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-15 is/are pending in the application.
 4a) Of the above claim(s) 8 and 13-15 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-5 and 9-12 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant argues again the Species B, claims 8 and 13-15, does not require the limitation that they were previously in service prior to the other steps recited. Response, page 5. However, this argument is not found persuasive. Claims 8, and 13-15 are drawn to the refurbishing embodiment, since these claims require the step of "placing the assembled turbine vane and turbine outer case into service in a turbine engine, thereafter taking the assembled gas turbine vane and gas turbine outer case out of service, and thereafter repairing the weld area using a metal spray technique, there being no weld repair of the weld area after the step of welding and before the step of repairing." Contrary to Applicant's assertion, the welding step occurs after taking the assembly out of service.

Claims 8 and 13-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 and 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of U.S. Pat. 5,360,961 to Ingall et al and/or JP 11-336502 to MITSUBISHI.

AAPA discloses in the Specification:

[0003] In the turbine section of the engine, stationary turbine vanes (also termed "nozzles") are supported ("hung") on and extend inwardly from a stationary turbine outer case. The turbine blades are supported on and extend outwardly from a rotating rotor disk. Multiple stages of the stationary turbine vanes and the rotating turbine blades alternate with each other along the axial length of the turbine section, to extract the optimum power from the hot combustion gases. The stationary turbine vanes shape and direct the flow of hot exhaust gas to impinge upon the turbine blades and cause them, the rotor disk, and the shaft to turn, powering the compressor.

[0004] The stationary turbine vanes are not rigidly supported on the turbine outer case, because of the differential movements generated by the gas forces and fatigue loading, and by the thermal expansion differences of the various portions of the structure during service. Instead, they are somewhat loosely supported by a support region and allowed to move slightly during service.

[0005] The relative movements of the turbine outer case and the turbine vane in the support region prolong the life of the structure, but they can produce severe wear damage in the support region. ***In the usual approach to avoid or repair the damage, the support region is coated with a thermally sprayed wear-resistant coating.*** However, in the work leading to the present invention, the inventors have found that the thermal-spray coating approach is insufficient in many instances, particularly those where the amount and depth of wear damage are great.

(emphasis added). However, while AAPA notes that use of a wear-resistant coating between the wear surfaces of the vane and casing, it does not disclose bonding the wear resistant coating by welding.

Ingall discloses a method of welding a wear-resistant material (40) to a turbine assembly. See Figure 2.

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The edges 20 and 22 of the shrouds 18 of adjacent turbine blades 10 are arranged to interlock such that in operation the edges 20 and 22 of adjacent turbine blades 10 rub together to damp vibrations of the turbine blades. The edges 20 and 22 are conventionally provided with wear resistant coatings to minimise damage to the edges 20 and 22 of the shrouds 18. The turbine blades 10 are generally cast from a nickel base alloy and cobalt base wear resistant coatings are generally applied to the edges of the shrouds.

Col. 3, lines 11-21.

MITSUBISHI discloses:

To improve wear resistance of a contact surface and use the steam turbine moving blade safely and stably over a long period of time by cladding by welding a welding material of a cobalt base alloy having a specified composition to a contact surface of a shroud cover formed on the tips of plural moving blades adjacent to each other at the front and rear edges thereof in the circumferential direction.

JPO Abstract.

Regarding claim 1, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have bonded the wear resistant material of AAPA, in light of the teachings of Ingall and/or MITSUBISHI, in order to provide a wear resistant material which is stable for a long period of time.

Regarding claims 2, 7, and 9, Ingall discloses "The metallic substrate may be premachined before the weld is deposited on the metallic substrate." Col. 2, lines 12-13.

Regarding claims 3 and 10, Ingall discloses the outer case and vane may be a nickel-base alloy, and the wear-resistant material a cobalt-base alloy, see Col. 3, lines 40-42.

Regarding claims 4-5, and 11-12, Ingall discloses the coating can be used on various wear surface, including vanes, blades, and shrouds. Cols. 5-6, line 66-14. AAPA noted coating the vane and casing as well.

Response to Arguments

4. Applicant's arguments filed February 9, 2006, have been fully considered but they are not persuasive.

Applicant's arguments with respect to Hasz have been found persuasive. After further review, the Examiner agrees with Applicant that Hasz does not teach "a turbine vane, that when assembled, is supported don the turbine outer case in a support region whereat a van-support area of the turbine vane contact a case-support are of the turbine outer case." Therefore, the rejections based on Hasz have been withdrawn.

Applicant also argues with respect to Claims 1-5 and 7-15 that the matter referenced by the Examiner as Applicant's Admitted Prior Art (AAPA) is not an admission and therefore not prior art. Response, page 7.

MPEP 2129 states, "When Applicant states that something is prior art, it is taken as being available as prior art against the claims. Admitted prior art can be used in obviousness rejections. *In re Nomiya*, 509 F.2d 566, 184 USPQ 607, 610 (CCPA 1975). The specification as originally filed, noted Sections [0003-0005] under the heading "Background of Invention," and remarked "In the ***usual approach*** to avoid or repair the damage, the support region is coated with a thermally sprayed wear-resistant coating." [0005] (emphasis added). In addition, Applicant noted the drawbacks of the thermally sprayed wear-resistant coating, [0005], and thus seeks to rely on a welding technique instead. [0007]. The Examiner recognizes that it may be Applicant's determination that thermally sprayed wear-resistant coatings are insufficient

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in many instances, but that does not mean such structures were not previously known in the art. See e.g., U.S. Pat. 5,188,507 (vanes 40 hung on outer casing 10, and coating provided on contact portions 30); U.S. Pat. 4,552,509, Col. 4, lines 28-32 ("The operationally cooperating abutment faces of the respective wall portions, or at least those of one of the two components, can be provided with wear inhibiting coatings deposited by thermal spraying or electroplating processes."). Applicant's disclosure suggests at least stationary that turbine vanes (also termed "nozzles") supported ("hung") on and extending inwardly from a stationary turbine outer case having a thermally sprayed wear-resistant coating are known.

Now Applicant is couching this matter as a trade secret, rather than as prior art. Since Applicant originally suggested that the matter was prior art, then Applicant is under the burden to provide evidence, e.g., an affidavit, that such matter was a trade secret and not prior art.

Ingall and JP '502 note welding a wear resistant coating in order to reduce contact between blades. This is essentially the same solution Applicant is proposing between the vanes and outer casing. AAPA (and also U.S. '507 & U.S. '509) recognized similar problems with wear between the vanes and casing, and proposed thermally spraying coatings. Ingall and JP '502 recognize a welded wear resistant material is stable for a long period of time; an improvement over sprayed coatings. Therefore, the Examiner maintains the rejections are valid.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (571) 272-4527. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Nguyen can be reached on (571) 272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Eric B. Compton
Primary Examiner
Art Unit 3726

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